

This listing of claims will replace all prior versions and listings of claims in the application:

**LISTING OF CLAIMS**

1. (Previously Presented) An oxygen-delivery matrix, comprising, a biocompatible, single unit matrix capable of delivering oxygen, comprising

- a) a swellable, cross-linked polyacrylamide polymer network,
- b) a catalyst mixed within the cross-linked polyacrylamide polymer network,

and

c)oxygen in closed cells within the cross-linked polyacrylamide polymer network substantially where the catalyst is present, wherein during manufacture of the matrix, after the polyacrylamide polymer network is cross-linked., the oxygen is produced in closed cells within the cross-linked polyacrylamide polymer network by reacting the catalyst a second reactant, such that decomposition of the second reactant results in oxygen in closed cells within the cross-linked polyacrylamide network, and wherein with use of the matrix, oxygen is transferred from the closed cells.

2. (Original) The matrix of Claim 1, further comprising at least one active agent.

3. (Canceled)

4. (Previously Presented) The matrix of Claim 1, wherein the oxygen delivery matrix further comprises a non-gellable polysaccharide.

5. (Canceled)

6. (Previously Presented) The matrix of Claim 1, wherein the second reactant is a peroxide.

7. (Canceled)

8. (Previously Presented) The matrix of Claim 1, wherein the catalyst is a carbonate salt, a salt of iodide, manganese dioxide, cupric chloride, ferric chloride or an enzyme.

9-20. (Canceled)

21. (Previously Presented) The matrix of Claim 2, wherein the at least one active agent comprises gases, anti-microbial agents, anti-fungal agents, anti-bacterial agents, anti-viral agents, anti-parasitic agents, mycoplasma treatments, growth factors, proteins, nucleic acids, angiogenic factors, anesthetics, mucopolysaccharides, metals, pharmaceuticals, chemotherapeutic agents, herbicides, growth inhibitors, wound healing agents, growth promoters, indicators of change in the environment, enzymes, nutrients, vitamins, minerals, carbohydrates, fats, fatty acids, nucleosides, nucleotides, amino acids, sera, antibodies and fragments thereof, lectins, immune stimulants, immune suppressors, coagulation factors, neurochemicals, cellular receptors, antigens, adjuvants, or radioactive materials.

22. (Canceled)

23. (Previously Presented) The matrix of Claim 21, wherein the anti-microbial agents comprises isoniazid, ethambutol, pyrazinamide, streptomycin, clofazimine, rifabutin, fluoroquinolones, ofloxacin, sparfloxacin, rifampin, azithromycin, clarithromycin, dapsone, tetracycline, erythromycin, ciprofloxacin, doxycycline, ampicillin, amphotericin B, ketoconazole, fluconazole, pyrimethamine, sulfadiazine, clindamycin, lincomycin, pentamidine, atovaquone, paromomycin, diclazaril, acyclovir, trifluorouridine, foscarnet, penicillin, gentamicin, ganciclovir, iatroconazole, miconazole, Zn-pyridhione, silver salts, chloride, bromide, iodide, or periodate.

24. (Previously Presented) The matrix of Claim 21, wherein the growth factors comprise basic fibroblast growth factor, acidic fibroblast growth factor, nerve growth factor, epidermal growth factor, insulin-like growth factors 1 and 2, platelet derived growth factor, tumor angiogenesis factor, vascular endothelial growth factor, corticotropin releasing factor, transforming growth factors  $\alpha$  and  $\beta$ , interleukin-8, granulocyte-macrophage colony stimulating factor, interleukins, or interferons.

25. (Previously Presented) The matrix of Claim 21, wherein the mucopolysaccharides comprise heparin, heparin sulfate, heparinoids, dermatitin sulfate, pentosan polysulfate, chondroitin sulfate, hyaluronic acid, cellulose, agarose, chitin, dextran, carrageenan, linoleic acid, or allantoin.

26. (Previously Presented) The matrix of Claim 21, wherein the proteins comprise collagen, cross-linked collagen, fibronectin, laminin, elastin, or cross-linked elastin.

27. (Previously Presented) The matrix of Claim 21, wherein the metals comprise zinc or silver.

28. (Previously Presented) The matrix of Claim 1, wherein the matrix comprises a stranded configuration.

29-30. (Canceled)

31. (Previously Presented) The matrix of Claim 1, further comprising a water loss control agent comprising petrolatum, glycolipids, ceramides, free fatty acids, cholesterol, triglycerides, sterylesters, cholesteryl sulfate, linoleic ethyl ester, or silicone oil.

32. (Previously Presented) The matrix of Claim 1, further comprising a plasticizer comprising glycerol, water, propylene glycol, or butanol.

33. (Previously Presented) The matrix of Claim 1, further comprising a hydration control agent comprising isopropyl alcohol, ethanol, glycerol, butanol, or propylene glycol.

34. (Previously Presented) The matrix of Claim 4, wherein the non-gellable polysaccharide is guar gum.

35. (Previously Presented) The matrix of Claim 8, wherein the enzyme is catalase.

36. (Canceled)

37. (Canceled)

38. (Previously Presented) An oxygen delivery device, comprising a biocompatible, single unit matrix capable of delivering oxygen, comprising;

- a) a swellable, cross-linked polyacrylamide polymer network,
- b) a catalyst mixed within the cross-linked polyacrylamide polymer network,
- c) oxygen in closed cells within the cross-linked polyacrylamide polymer network substantially where the catalyst is present,
- d) at least one active agent wherein the cross-linked polyacrylamide polymer network is cross-linked prior to oxygen formation,

wherein the oxygen is produced by reacting the catalyst within the cross-linked polyacrylamide polymer network with a second reactant during the manufacture of the matrix to create multiple oxygen-rich closed cells within the cross-linked polyacrylamide polymer network of the matrix, wherein, with use of the matrix, oxygen is transferred from the closed cells.

39. (Previously Presented) A biocompatible, single unit cross-linked polyacrylamide matrix, comprising a swellable, cross-linked polyacrylamide polymer network, at least one active agent, a catalyst mixed within the cross-linked polyacrylamide polymer network, and oxygen in closed cells wherein the oxygen is produced within the cross-linked polyacrylamide polymer network by the reaction of the catalyst and a second reactant, wherein the polyacrylamide polymer network is cross-linked prior to gas formation.

40. (Previously Presented) The matrix of Claim 38, wherein the oxygen delivery matrix further comprises a non-gellable polysaccharide.

41. (Previously Presented) The matrix of Claim 38, wherein the second reactant is a peroxide.

42. (Previously Presented) The matrix of Claim 38, wherein the catalyst is a carbonate salt, a salt of iodide, manganese oxide, cupric chloride, ferric chloride, or an enzyme.

43. (Previously Presented) The matrix of Claim 38, wherein the at least one active agent comprises gases, anti-microbial agents, anti-fungal agents, anti-bacterial agents, anti-viral agents, anti-parasitic agents, mycoplasma treatments, growth factors, proteins, nucleic acids, angiogenic

factors, anesthetics, mucopolysaccharides, metals, pharmaceuticals, chemotherapeutic agents, herbicides, growth inhibitors, wound healing agents, growth promoters, indicators of change in the environment, enzymes, nutrients, vitamins, minerals, carbohydrates, fats, fatty acids, nucleosides, nucleotides, amino acids, sera, antibodies and fragments thereof, lectins, immune stimulants, immune suppressors, coagulation factors, neurochemicals, cellular receptors, antigens, adjuvants, or radioactive materials.

44. (Canceled)

45. (Previously Presented) The matrix of Claim 43, wherein the anti-microbial agents comprises isoniazid, ethambutol, pyrazinamide, streptomycin, clofazimine, rifabutin, fluoroquinolones, ofloxacin, sparfloxacin, rifampin, azithromycin, clarithromycin, dapsone, tetracycline, erythromycin, ciprofloxacin, doxycycline, ampicillin, amphotericin B, ketoconazole, fluconazole, pyrimethamine, sulfadiazine, clindamycin, lincomycin, pentamidine, atovaquone, paromomycin, diethylazide, acyclovir, trifluorouridine, foscarnet, penicillin, gentamicin, ganciclovir, iatoconazole, miconazole, Zn-pyrithione, silver salts, chloride, bromide, iodide, or periodate.

46. (Previously Presented) The matrix of Claim 43, wherein the growth factors comprise basic fibroblast growth factor, acidic fibroblast growth factor, nerve growth factor, epidermal growth factor, insulin-like growth factors 1 and 2, platelet derived growth factor, tumor angiogenesis factor, vascular endothelial growth factor, corticotropin releasing factor, transforming growth factors  $\alpha$  and  $\beta$ , interleukin-8, granulocyte-macrophage colony stimulating factor, interleukins, or interferons.

47. (Previously Presented) The matrix of Claim 43, wherein the mucopolysaccharides comprise heparin, heparin sulfate, heparinoids, dermatan sulfate, pentosan polysulfate, chondroitin sulfate, hyaluronic acid, cellulose, agarose, chitin, dextran, carrageenan, linoleic acid, or allantoin.

48. (Previously Presented) The matrix of Claim 43, wherein the proteins comprise collagen, cross-linked collagen, fibronectin, laminin, elastin, or cross-linked elastin.

49. (Previously Presented) The matrix of Claim 43, wherein the metals comprise zinc or silver.

50. (Previously Presented) The matrix of Claim 38, wherein the matrix comprises a stranded configuration.

51. (Previously Presented) The matrix of Claim 38, further comprising a water loss control agent comprising petrolatum, glycolipids, ceramides, free fatty acids, cholesterol, triglycerides, sterylesters, cholesteryl sulfate, linoleic ethyl ester, or silicone oil.

52. (Previously Presented) The matrix of Claim 38, further comprising a plasticizer comprising glycerol, water, propylene glycol, or butanol.

53. (Previously Presented) The matrix of Claim 38, further comprising a hydration control agent comprising isopropyl alcohol, ethanol, glycerol, butanol, or propylene glycol.

54. (Previously Presented) The matrix of Claim 40, wherein the non-gellable polysaccharide is guar gum.

55. (Previously Presented) The matrix of Claim 42, wherein the enzyme is catalase.

56. (Previously Presented) The matrix of Claim 39, wherein the oxygen delivery matrix further comprises a non-gellable polysaccharide.

57. (Previously Presented) The matrix of Claim 39, wherein the second reactant is a peroxide.

58. (Previously Presented) The matrix of Claim 39, wherein the catalyst is a carbonate salt, a salt of iodide, manganese oxide, cupric chloride, ferric oxide, or an enzyme.

59. (Previously Presented) The matrix of Claim 39, wherein the at least one active agent comprises gases, anti-microbial agents, anti-fungal agents, anti-bacterial agents, anti-viral agents,

anti-parasitic agents, mycoplasma treatments, growth factors, proteins, nucleic acids, angiogenic factors, anesthetics, mucopolysaccharides, metals, pharmaceuticals, chemotherapeutic agents, herbicides, growth inhibitors, wound healing agents, growth promoters, indicators of change in the environment, enzymes, nutrients, vitamins, minerals, carbohydrates, fats, fatty acids, nucleosides, nucleotides, amino acids, sera, antibodies and fragments thereof, lectins, immune stimulants, immune suppressors, coagulation factors, neurochemicals, cellular receptors, antigens, adjuvants, or radioactive materials.

60. (Canceled)

61. (Previously Presented) The matrix of Claim 59, wherein the anti-microbial agents comprises isoniazid, ethambutol, pyrazinamide, streptomycin, clofazimine, rifabutin, fluoroquinolones, ofloxacin, sparfloxacin, rifampin, azithromycin, clarithromycin, dapsone, tetracycline, erythromycin, ciprofloxacin, doxycycline, ampicillin, amphotericin B, ketoconazole, fluconazole, pyrimethamine, sulfadiazine, clindamycin, lincomycin, pentamidine, atovaquone, paromomycin, diclazaril, acyclovir, trifluorouridine, foscarnet, penicillin, gentamicin, ganciclovir, iatroconazole, miconazole, Zn-pyrithione, silver salts, chloride, bromide, iodide, or periodate.

62. (Previously Presented) The matrix of Claim 59, wherein the growth factors comprise basic fibroblast growth factor, acidic fibroblast growth factor, nerve growth factor, epidermal growth factor, insulin-like growth factors 1 and 2, platelet derived growth factor, tumor angiogenesis factor, vascular endothelial growth factor, corticotropin releasing factor, transforming growth factors  $\alpha$  and  $\beta$ , interleukin-8, granulocyte-macrophage colony stimulating factor, interleukins, or interferons.

63. (Previously Presented) The matrix of Claim 59, wherein the mucopolysaccharides comprise heparin, heparin sulfate, heparinoids, dermatitin sulfate, pentosan polysulfate, chondroitin sulfate, hyaluronic acid, cellulose, agarose, chitin, dextran, carrageenan, linoleic acid, or allantoin.

64. (Previously Presented) The matrix of Claim 59, wherein the proteins comprise collagen, cross-linked collagen, fibronectin, laminin, elastin, or cross-linked elastin.
65. (Previously Presented) The matrix of Claim 59, wherein the metals comprise zinc or silver.
66. (Previously Presented) The matrix of Claim 39, wherein the matrix comprises a stranded configuration.
67. (Previously Presented) The matrix of Claim 39, further comprising a water loss control agent comprising petrolatum, glycolipids, ceramides, free fatty acids, cholesterol, triglycerides, sterylesters, cholesteryl sulfate, linoleic ethyl ester, or silicone oil.
68. (Previously Presented) The matrix of Claim 39, further comprising a plasticizer comprising glycerol, water, propylene glycol, or butanol.
69. (Previously Presented) The matrix of Claim 39, further comprising a hydration control agent comprising isopropyl alcohol, ethanol, glycerol, butanol, or propylene glycol.
70. (Previously Presented) The matrix of Claim 56, wherein the non-gellable polysaccharide is guar gum.
71. (Previously Presented) The matrix of Claim 58, wherein the enzyme is catalase.